

AMENDMENTS TO THE DRAWINGS

Replacement drawing sheet with FIGURE 4B is attached herewith. Replacement FIGURE 4B corrects a couple of minor drafting errors. Specifically, replacement FIGURE 4B removes the connection between block 434 and blocks 440 and 442. Replacement FIGURE 4B also removes the connection between block 438 and blocks 444, 446, and 448.

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REMARKS

Applicants respectfully request that the above-identified application be re-examined.

During a review of the drawing figures, applicants noticed that FIGURE 4B had incorrect connectors connecting a few illustrative blocks. Applicants have removed the incorrect connectors. Attached hereto is a replacement drawing sheet with the foregoing corrections.

The Office Action mailed May 4, 2006 (hereinafter "Office Action") rejected Claims 13-22 under 35 U.S.C. § 101 as being directed to non-statutory subject matter. Specifically, the claims recited the limitation "computer readable medium," which is defined in the specification as communication media, including carrier waves, wireless media, and the like. In response, applicants have amended the claims by added the word "storage" between readable and medium. Applicants submit that the foregoing amendment renders Claims 13-22 statutory and request that the 35 U.S.C. § 101 rejection for Claims 13-22 be withdrawn. The Office Action also rejected Claims 1-31 under 35 U.S.C. § 102(b) as being unpatentable over U.S. Patent No. 6,134,559, issued to Brumme et al. (hereinafter "Brumme"). Applicants respectfully disagree because Brumme does not teach, suggest, or describe all claim limitations, which are discussed in detail hereinafter.

Prior to discussing in detail why applicants believe that all of the claims in the present application are allowable in view of the cited and applied reference, a brief description of the disclosed subject matter and a brief description of the teachings of the cited and applied reference are provided. The following discussions of the disclosed subject matter and the cited and applied reference are not provided to define the scope or interpretation of any of the claims of this application. Instead, these discussions are provided to help the United States Patent and Trademark Office better appreciate important claim distinctions discussed thereafter.

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Disclosed Subject Matter

One or more data stores, each of a different type, that store one or more data objects are disclosed. Further, an object-oriented heterogeneous data store interface for interacting with the data stores is also disclosed. The object-oriented heterogeneous data store interface includes a query component and a provider interface that specifies a query behavior with a query component parameter for provider components. For each type of data store, there is a provider plug-in to the object-oriented heterogeneous data store interface. Each provider plug-in includes one or more provider components that conform to the provider interface.

According to an exemplary embodiment, the query component of the object-oriented heterogeneous data store interface is instantiated. Each query component has an add expression behavior with at least one query term parameter and a query operator parameter. A query expression is added to the instantiated query component with the add expression behavior of the query component. The query component is provided to a data store component of the object-oriented heterogeneous data store interface.

According to another exemplary embodiment, the object-oriented heterogeneous data store interface includes one or more data store object components corresponding to data objects stored in the data stores. A data store object design graphical user interface (GUI) is utilized to build graphical representations of data objects. A data store object source code generator generates object-oriented programming language source code for each data store object component of the object-oriented heterogeneous data store interface.

Brumme

Brumme purportedly discloses a uniform object model that integrates objects defined by foreign type systems into a single integrated object oriented system. The type system for the integrated object oriented system supports a superset of features from foreign object systems.

The uniform object model converts foreign objects into uniform object model objects defined by the integrated type system and layers onto the uniform object model objects additional members supported by the integrated type system. Adapters integrate foreign objects and data sources into the integrated object oriented system by implementing foreign objects as full fledged objects of the system. The foreign object adapters are bi-directional such that objects, registered in the system, are exposed to foreign object systems. During run time, clients obtain a connection to the data source adapter, which supports the target data source, to execute transactions in the target data source. When executing transactions in the target data source, the data source adapter operates as an object access mechanism by generating an object populated with data from the target data source. The data source adapters support a single predetermined dialect of a query language, regardless of the target data source, and generate a query statement compatible with the target data source. The data source adapters also support persistence of objects in the data sources.

Claim Rejections Under 35 U.S.C. § 102(b)

As indicated above, Claims 1-31 were rejected under 35 U.S.C. § 102(b) as being unpatentable over Brumme. Applicants respectfully disagree. While applicants disagree with the grounds of rejection cited in the Office Action, in order to advance the prosecution of the present application, Claims 1-4, 6, 9-11, 13-23, 26-28, 30, and 31 have been amended to clarify the claim language and further distinguish the claimed invention from Brumme.

Claims 1-12

Claim 1, as amended, reads as follows:

1. A computerized system, comprising:
at least one data store, each data store comprising a different data
type configured to store at least one data store object;
an object-oriented heterogeneous data store interface comprising:
a data store component corresponding to each data store;

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a query component comprising a query specification attribute; and

a provider interface comprising a query component behavior specification specifying a query behavior with said query specification attribute of said query component; and

for each data store, a provider plug-in to the object-oriented heterogeneous data store interface, and each provider plug-in comprises at least one provider component configured with a behavior conforming to the query component behavior specification of the provider interface.

Applicants submit that Brumme does not teach each and every limitation of independent Claim 1. More specifically, Brumme does not teach "an object-oriented heterogeneous data store interface comprising a data store component corresponding to each data store," "an object-oriented heterogeneous data store interface comprising a provider interface comprising a query component behavior specification specifying a query behavior with said query specification attribute of said query component," and "each provider plug-in comprises at least one provider component configured with a behavior conforming to the query component behavior specification of the provider interface" as recited in Claim 1. The first limitation of Claim 1, namely, an object-oriented heterogeneous data store interface comprising a data store component corresponding to each data store is nowhere to be found in Brumme. Further, Col. 32, lines 49-66 of Brumme purportedly describes an embodiment for executing query operations using adapters. Whether or not the adapter interface can handle queries in a query language statement, as remarked on page 3 of the Office Action, Brumme does not teach the uniform object model comprising an adapter interface that comprises a query component behavior specification specifying a query behavior with the query specification attribute of the query component. Furthermore, nowhere does Brumme teach that each adapter (provider plug-in) comprises at least one adapter component configured with a behavior conforming to the query component behavior specification of the adapter interface. Since Brumme does not teach, suggest, or describe the foregoing limitations of Claim 1, applicants submit that Claim 1 is not rejectable under 35 U.S.C.

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§ 102(b) based on Brumme and request that this ground of rejection be withdrawn and Claim 1 be allowed.

Claims 2-12 depend directly or indirectly from independent Claim 1 and include all of the recitations of the base claim. Accordingly, Claims 2-12 are submitted to be allowable for at least the same reasons that Claim 1 is allowable. Moreover, many of these dependent claims include additional limitations, some of which are discussed below, that are also not taught or even remotely suggested by Brumme.

Claim 2

As amended, Claim 2 reads as follows:

2. The computerized system of claim 1, wherein:
the data store component comprising a commit component behavior specification specifying a commit behavior with a data store object component parameter, the data store object component comprising:
a get value component behavior specification specifying a get value behavior with a data object attribute index parameter;
a get object component behavior specification specifying a get object behavior with a data object attribute index parameter; and
a get list component behavior specification specifying a get list behavior with a data object attribute index parameter; and
each provider plug-in further comprises at least one provider object component, and each provider object component is configured with:
a get value behavior conforming with the get value component behavior specification of the provider object interface;
a get object behavior conforming with the get object component behavior specification of the provider object interface;
a get list behavior conforming with the get list component behavior specification of the provider object interface; and
an index of attributes of at least one of said at least one data store object.

Applicants submit that Brumme does not teach each and every limitation of dependent Claim 2. More specifically, Brumme does not teach "the data store component comprising a commit component behavior specification specifying a commit behavior with a data store object

component parameter," "the data store object component comprising a get value component behavior specification specifying a get value behavior with a data object attribute index parameter, a get object component behavior specification specifying a get object behavior with a data object attribute index parameter, and a get list component behavior specification specifying a get list behavior with a data object attribute index parameter," "each provider plug-in further comprises at least one provider object component, and each provider object component is configured with a get value behavior conforming with the get value component behavior specification of the provider object interface, a get object behavior conforming with the get object component behavior specification of the provider object interface, a get list behavior conforming with the get list component behavior specification of the provider object interface, and an index of attributes of at least one of said at least one data store object" as recited in Claim 2. The first limitation of Claim 2, namely, the data store component comprising a commit component behavior specification specifying a commit behavior with a data store object component parameter is nowhere to be found in Brumme. Further, the Office Action states on page 4 that Brumme purportedly teaches at Col. 26, lines 2-10 usage of get/set attributes, at Col. 13, lines 41-64 control of the get/set attribute method, and at Col. 32, lines 49-66 specification of the query by a parse tree. Whether or not Brumme purportedly teaches the usage of get/set attributes, control of the get/set attribute method, and the specification of the query by the parse tree, Brumme does not teach the data store object component comprising: a get value component behavior specification specifying a get value behavior *with a data object attribute index parameter*, a get object component behavior specification specifying a get object behavior *with a data object attribute index parameter*, and a get list component behavior specification specifying a get list behavior *with a data object attribute index parameter* (emphasis added). Furthermore, the Office Action states on page 4 that Brumme purportedly teaches at Col. 34,

lines 25-37 holding of an object data to be queried by an adapter, access of a collection of objects by the adapter, and utilization of object reference tables by the adaptor. Whether or not Brumme purportedly teaches holding of an object data to be queried by an adapter, access of a collection of objects by the adapter, and utilization of object reference tables by the adaptor, Brumme does not teach *each provider plug-in further comprises at least one provider object component, and each provider object component is configured with a get value behavior conforming with the get value component behavior specification of the provider object interface, a get object behavior conforming with the get object component behavior specification of the provider object interface, a get list behavior conforming with the get list component behavior specification of the provider object interface, and an index of attributes of at least one of said at least one data store object* (emphasis added). Since Brumme does not teach, suggest, or describe the aforementioned limitations of Claim 2, applicants respectfully submit that Claim 2 is allowable for reasons in addition to the reasons why Claim 1 is allowable.

Claim 3

As amended, Claim 3 reads as follows:

3. The computerized system of claim 2, wherein the provider object interface further configured with:
 - a set value component behavior specification specifying a set value behavior with a data object attribute index parameter;
 - a set null value component behavior specification specifying a set null value behavior with a data object attribute index parameter;
 - a null value test component behavior specification specifying a null value test behavior with a data object attribute index parameter; and
 - a populated value test component behavior specification specifying a populated value test behavior with a data object attribute index parameter.

Applicants submit that Brumme does not teach any limitation of dependent Claim 3. The Office Action states on page 5 that Brumme purportedly teaches at Col. 31, lines 36-50 introduction and instantiation of an object by an adapter, at Col. 26, lines 2-10 usage of the

get/set attributes and the usage of the get/set attributes to test for present attributes, and at Col. 31, lines 50-57 checking and locating of an object by an adapter using table information. Whether or not Brumme purportedly teaches introduction and instantiation of an object by an adapter, usage of the get/set attributes, usage of the get/set attributes to test for present attributes, and checking and locating of an object by an adapter using table information, Brumme does not teach the provider object interface further configured with a set value component behavior specification specifying a set value behavior *with a data object attribute index parameter*, a set null value component behavior specification specifying a set null value behavior *with a data object attribute index parameter*, a null value test component behavior specification specifying a null value test behavior *with a data object attribute index parameter*, and a populated value test component behavior specification specifying a populated value test behavior *with a data object attribute index parameter* (emphasis added). Since Brumme does not teach, suggest, or describe the aforementioned limitations of Claim 3, applicants respectfully submit that Claim 3 is allowable for reasons in addition to the reasons why Claims 1 and 2 are allowable.

Claim 4

As amended, Claim 4 reads as follows:

4. The computerized system of claim 1, wherein:
 - the object-oriented heterogeneous data store interface further comprises at least one data store object component, wherein each data store object component corresponding to a data store object; and
 - the provider interface further comprises:
 - a connect component behavior specification specifying a connect behavior;
 - a disconnect component behavior specification specifying a disconnect behavior; and
 - a commit component behavior specification specifying a commit behavior with a data store object component parameter.

Applicants submit that Brumme does not teach any limitation of dependent Claim 4. The Office Action states on page 5 that Brumme purportedly teaches at Figure 1, reference 180, and Col. 9, lines 60-67 the object-oriented heterogeneous data store interface further comprises at least one data store object component. Applicants cannot find reference 180 in Figure 1. Nevertheless, Col. 9, lines 60-67 describes how all adapters register foreign objects in the type system registry so that all meta data for all objects accessible in the uniform object model are contained in one location. Nowhere does Brumme teach the object-oriented heterogeneous data store interface further comprises at least one data store object component, wherein each data store object component corresponding to a data store object as recited in Claim 4. Further, the Office Action states on page 5 that Brumme purportedly teaches at Col. 27, lines 49-62 determining a connection to databases by an adapter, and at Col. 14, lines 13-21 determining, by rules, the exiting of a method, and determining the state of an object by triggers based on rules. Whether or not Brumme purportedly teaches determining a connection to databases by an adapter, determining, by rules, the exiting of a method, and determining the state of an object by triggers based on rules, Brumme does not teach *the provider interface further comprises a connect component behavior specification specifying a connect behavior, a disconnect component behavior specification specifying a disconnect behavior, and a commit component behavior specification specifying a commit behavior with a data store object component parameter* (emphasis added). Since Brumme does not teach, suggest, or describe the aforementioned limitations of Claim 4, applicants respectfully submit that Claim 4 is allowable for reasons in addition to the reasons why Claim 1 is allowable.

Claim 5

Claim 5 reads as follows:

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5. The computerized system of claim 4, wherein:
each data store object component comprises a data store operation attribute;
each provider component is further configured with a commit behavior conforming to the commit component behavior specification of the provider interface; and
the data store operation attribute of the data store object component parameter of the commit behavior of the provider component indicates a data store operation to occur during the commit.

Applicants submit that Brumme does not teach any limitation of dependent Claim 5. The Office Action states on page 6 that Brumme purportedly teaches at Col. 21, lines 45-62 a data store object includes attributes and types. Applicants respectfully disagree because Col. 21, lines 45-62 discusses a data source and a foreign object system included in the object oriented environment. As best as applicants can tell, the data source and the foreign object system are analogous to different data stores. Nowhere does Brumme teach the object-oriented heterogeneous data store interface further comprises at least one data store object component (Claim 4), each data store object component comprises a data store operation attribute (Claim 5). Further, the Office Action states on page 6 that Brumme purportedly teaches at Col. 15, lines 28-43 each object calls events to be executed to read on "each provider component is further configured with a commit behavior conforming to the commit component behavior specification of the provider interface" and "the data store operation attribute of the data store object component parameter of the commit behavior of the provider component indicates a data store operation to occur during the commit." Whether or not Brumme purportedly teaches each object calls events to be executed, Brumme does not teach for each data store, a provider plug-in to the object-oriented heterogeneous data store interface, and each provider plug-in comprises at least one provider component (Claim 1), each provider component is further configured with a commit behavior conforming to the commit component behavior specification of the provider interface (Claim 5), or the data store operation attribute of the data store object component

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parameter of the commit behavior of the provider component indicates a data store operation to occur during the commit. Since Brumme does not teach, suggest, or describe the aforementioned limitations of Claim 5, applicants respectfully submit that Claim 5 is allowable for reasons in addition to the reasons why Claims 1 and 4 are allowable.

Claim 6

As amended, Claim 6 reads as follows:

6. The computerized system of claim 1, wherein the object-oriented heterogeneous data store interface further comprises:
for each data store object stored in each data store, a data store object component; and
a data store component corresponding to each data store configured to provide a subset of the data store object components in response to the query component.

Applicants submit that Brumme does not teach any limitation of dependent Claim 6. The Office Action states on page 6 that Brumme purportedly teaches at Col. 21, lines 45-62 a data store object includes attributes and types to read on "the object-oriented heterogeneous data store interface further comprises for each data store object stored in each data store, a data store object component." Applicants are not sure what Col. 21, lines 45-62 has got to do with the aforementioned limitation since the aforementioned sections of Brumme were also cited against a limitation of Claim 5 that is different from the aforementioned limitation of Claim 6. Nowhere does Brumme teach the computerized system of claim 1, wherein the object-oriented heterogeneous data store interface further comprises for each data store object stored in each data store, a data store object component as recited in Claim 6. Further, the Office Action states on page 6 that Brumme purportedly teaches at Col. 31, line 65-Col. 32, line 16 an adapter responds to a query using object attributes in an object collection to read on "a data store component corresponding to each data store configured to provide a subset of the data store object

components in response to the query component." Whether or not Brumme purportedly teaches an adapter responding to a query using object attributes in an object collection, Brumme does not teach a data store component corresponding to each data store configured to provide a subset of the data store object components in response to the query component as recited in Claim 6. Since Brumme does not teach, suggest, or describe the aforementioned limitations of Claim 6, applicants respectfully submit that Claim 6 is allowable for reasons in addition to the reasons why Claim 1 is allowable.

Claim 7

Claim 7 reads as follows:

7. The computerized system of claim 1, wherein the query component is configured with:
 - an add expression behavior having:
 - at least one query term parameter; and
 - a query operator parameter; and
 - an add conjunction behavior having a query conjunction parameter.

Applicants submit that Brumme does not teach any limitation of dependent Claim 7. The Office Action states on page 6 that Brumme purportedly teaches at Col. 32, lines 17-21 the query component is configured with an add expression behavior having at least one query term parameter. Applicants respectfully disagree because Col. 32, lines 17-21 describe a client generating a query to extract information from a data source by integrating two data sources. Nowhere does Brumme teach an object-oriented heterogeneous data store interface comprising a query component that is configured with an add expression behavior having at least one query term parameter. Further, the Office Action states on page 6 that Brumme purportedly teaches at Col. 32, lines 28-30 a query operator parameter. Applicants respectfully disagree because Col. 32, lines 28-30 describes in order to retrieve a table in a relational database, the client

generates a query for the uniform object oriented environment based on a pre-determined query language dialect. Nowhere does Brumme teach an object-oriented heterogeneous data store interface comprising a query component that is configured with an add expression behavior having a query operator parameter. Furthermore, the Office Action states on page 6 that Brumme purportedly teaches at Col. 33, lines 13-21 a query interacting with a parse tree and modifying the collection of objects in the parse tree. Whether or not Brumme purportedly teaches interacting with a parse tree and modifying the collection of objects in the parse tree, Brumme does not teach an object-oriented heterogeneous data store interface comprising a query component that is configured with an add conjunction behavior having a query conjunction parameter. Since Brumme does not teach, suggest, or describe the aforementioned limitations of Claim 7, applicants respectfully submit that Claim 7 is allowable for reasons in addition to the reasons why Claim 1 is allowable.

Claim 8

Claim 8 reads as follows:

8. The computerized system of claim 7, wherein the add expression behavior of the query component further has a query component parameter.

Applicants submit that Brumme does not teach the limitation of dependent Claim 8. The Office Action states on page 7 that Brumme purportedly teaches at Col. 33, lines 13-36 a query moves down the parse tree. Whether or not Brumme purportedly teaches a query moving down a parse tree, Brumme does not teach the add expression behavior of the query component further has a query component parameter as recited in Claim 8. Since Brumme does not teach, suggest, or describe the aforementioned limitation of Claim 8, applicants respectfully submit that Claim 8 is allowable for reasons in addition to the reasons why Claims 1 and 7 are allowable.

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Claim 9

As amended, Claim 9 reads as follows:

9. The computerized system of claim 1, wherein:
 - each data store object stored in said at least one data store comprises at least one data object attribute;
 - the object-oriented heterogeneous data store interface further comprises a data store object component corresponding to each data store object stored in each data store; and
 - each data store object component of said object-oriented heterogeneous data store interface comprises a field list attribute comprising a field specification for at least one data object attribute of the data store object corresponding to the data store object component, the field specification comprising a defer property specifying that retrieval of the data object attribute is deferrable.

Applicants submit that Brumme does not teach each and every limitation of dependent Claim 9. More specifically, Brumme does not teach "each data store object component of said object-oriented heterogeneous data store interface comprises a field list attribute comprising a field specification for at least one data object attribute of the data store object corresponding to the data store object component, the field specification comprising a defer property specifying that retrieval of the data object attribute is deferrable." The Office Action states on page 7 that Brumme purportedly teaches at Col. 26, lines 45-64 an adaptor can indicate persistence, meaning retrieval is not necessary to read on "each data store object component of said object-oriented heterogeneous data store interface comprises a field list attribute comprising a field specification for at least one data object attribute of the data store object corresponding to the data store object component, the field specification comprising a defer property specifying that retrieval of the data object attribute is deferrable." Applicants assert that "persistence" does not mean "not necessary." Persistence means "permanence," and permanence also does not mean "not necessary." Claim 9 does not teach "persistence" or "not necessary" of retrieval of the data object attribute. Claim 9 teaches that the field specification comprises a defer property

specifying that retrieval of the data object attribute is deferrable. In other words, the field specification comprises a defer property specifying that the retrieval of the data object can be postponed. Since Brumme does not teach, suggest, or describe the aforementioned limitation of Claim 9, applicants respectfully submit that Claim 9 is allowable for reasons in addition to the reasons why Claim 1 is allowable.

Claim 12

Claim 12 reads as follows:

12. The computerized system of claim 9, further comprising a data store object source code generator configured to generate object-oriented programming language source code for each data store object component of the object-oriented heterogeneous data store interface.

Applicants submit that Brumme does not teach the limitation of dependent Claim 12. The Office Action states on page 8 that Brumme purportedly teaches at Col. 9, lines 46-59 an adaptor converts or "dress" objects from various data stores into a uniform object model. Applicants assert that "convert" does not mean "generate." Convert means "transform." Claim 12 does not teach conversion let alone an adaptor that converts or "dress" objects from various data stores into a uniform object model. Claim 12 teaches a data store object source code generator configured to generate object-oriented programming language source code for each data store object component of the object-oriented heterogeneous data store interface. In other words, the data store object source code generator is configured to be the cause of object-oriented programming language source code for each data store object component of the object-oriented heterogeneous data store interface. Since Brumme does not teach, suggest, or describe the aforementioned limitation of Claim 12, applicants respectfully submit that Claim 12 is allowable for reasons in addition to the reasons why Claims 1 and 9 are allowable.

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Claims 13-22

Claim 13, as amended, reads as follows:

13. A computer-readable storage medium having stored thereon computer-executable instructions for performing a method comprising:

instantiating a first query component in a plurality of query components of an object-oriented heterogeneous data store interface, each query component of the object-oriented heterogeneous data store interface having an add expression behavior, the add expression behavior having:

at least one query term parameter; and

a query operator parameter;

adding a query expression to the first query component with the add expression behavior of the first query component; and

providing the first query component to a data store component of the object-oriented heterogeneous data store interface.

Applicants submit that Brumme does not teach each and every limitation of independent Claim 13. More specifically, Brumme does not teach "each query component of the object-oriented heterogeneous data store interface having an add expression behavior, the add expression behavior having at least one query term parameter and a query operator parameter," "adding a query expression to the first query component with the add expression behavior of the first query component," and "providing the first query component to a data store component of the object-oriented heterogeneous data store interface" as recited in Claim 13. The Office Action states on page 8 that Brumme purportedly teaches at Col. 32, lines 17-21 each query component of the object-oriented heterogeneous data store interface having an add expression behavior as taught by Claim 13. Applicants respectfully disagree because Col. 32, lines 17-21 describe a client generating a query to extract information from a data source by integrating two data sources. Nowhere does Brumme teach each query component of the object-oriented heterogeneous data store interface having an add expression behavior. The Office Action states on page 8 that Brumme purportedly teaches at Col. 33, lines 13-21 a query interacts with the

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parse tree, modifying the collection of objects to read on "the add expression behavior having at least one query term parameter." Whether or not Brumme purportedly teaches interacting with a parse tree and modifying the collection of objects in the parse tree, Brumme does not teach each query component of the object-oriented heterogeneous data store interface having an add expression behavior, the add expression behavior having at least one query term parameter. The Office Action states on pages 8-9 that Brumme purportedly teaches at Col. 32, lines 28-30 a query operator parameter. Applicants respectfully disagree because Col. 32, lines 28-30 describes in order to retrieve a table in a relational database, the client generates a query for the uniform object oriented environment based on a pre-determined query language dialect. Nowhere does Brumme teach that each query component of the object-oriented heterogeneous data store interface having an add expression behavior, the add expression behavior having at least one query term parameter and a query operator parameter. The Office Action states on page 9 that Brumme purportedly teaches at Col. 33, lines 13-36 a query moves down the parse tree to read on "adding a query expression to the first query component with the add expression behavior of the first query component." Whether or not Brumme purportedly teaches a query moving down a parse tree, Brumme does not teach adding a query expression to the first query component with the add expression behavior of the first query component. The Office Action states on page 9 that Brumme purportedly teaches at Col. 33, lines 5-13 the data store returns to the adaptor a response to the query. Applicants assert that a data store is not the same as a data store component of the object-oriented heterogeneous data store interface. Accordingly, whether or not Brumme purportedly teaches the data store returns to the adaptor a response to the query, nowhere does Brume teach providing the first query component to a data store component of the object-oriented heterogeneous data store interface. Since Brumme does not teach, suggest, or describe the foregoing limitations of Claim 13, applicants submit that Claim 13 is not rejectable

under 35 U.S.C. § 102(b) based on Brumme and request that this ground of rejection be withdrawn and Claim 13 be allowed.

Claims 14-22 depend directly or indirectly from independent Claim 13 and include all of the recitations of the base claim. Accordingly, Claims 14-22 are submitted to be allowable for at least the same reasons that Claim 13 is allowable. Moreover, many of these dependent claims include additional limitations, some of which are discussed below, that are also not taught or even remotely suggested by Brumme.

Claim 15

As amended, Claim 15 reads as follows:

15. The computer-readable storage medium of claim 13,
wherein:
each query component specifies a subset of enterprise data objects;
each query component further has:
a get extensible markup language (XML) behavior; and
a set from extensible markup language (XML) behavior;
and
the method further comprises obtaining an extensible markup
language (XML) representation of the subset of enterprise data objects
specified by the first query component with the get extensible markup
language (XML) behavior of the first query component.

Applicants submit that Brumme does not teach each and every limitation of dependent Claim 15. More specifically, Brumme does not teach "each query component further has a get extensible markup language (XML) behavior and a set from extensible markup language (XML) behavior" and "obtaining an extensible markup language (XML) representation of the subset of enterprise data objects specified by the first query component with the get extensible markup language (XML) behavior of the first query component" as recited in Claim 15. The Office Action states on page 9 that Brumme purportedly teaches at Col. 7, lines 40-53 and Col. 8, lines 29-43 the aforementioned limitations of Claim 15. Not only can applicants not find "XML"

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mentioned in the above noted sections of Brumme, but "XML" is not mentioned anywhere in Brumme. Since Brumme does not teach XML, Brumme does not teach each query component further has a get extensible markup language (XML) behavior and a set from extensible markup language (XML) behavior and obtaining an extensible markup language (XML) representation of the subset of enterprise data objects specified by the first query component with the get extensible markup language (XML) behavior of the first query component. Since Brumme does not teach, suggest, or describe the aforementioned limitations of Claim 15, applicants respectfully submit that Claim 15 is allowable for reasons in addition to the reasons why Claim 13 is allowable.

Claim 16

As amended, Claim 16 reads as follows:

16. The computer-readable storage medium of claim 13, wherein:
 - the method further comprises instantiating a second query component of the object-oriented heterogeneous data store interface; and
 - the query expression added to the first query component comprises the second query component.

Applicants submit that Brumme does not teach each and every limitation of dependent Claim 16. More specifically, Brumme does not teach "the query expression added to the first query component comprises the second query component" as recited in Claim 16. The Office Action states on page 10 that Brumme purportedly teaches at Col. 32, lines 41-48 that the query is composed of two different queries to different databases to read on the aforementioned limitation of Claim 16. Applicants respectfully disagree because a query composed of two different queries is not the same as the query expression *added* to the first query component *comprises* the second query component. Nowhere does Brumme teach the aforementioned limitation of Claim 16. Since Brumme does not teach, suggest, or describe the aforementioned

limitations of Claim 16, applicants respectfully submit that Claim 16 is allowable for reasons in addition to the reasons why Claim 13 is allowable.

Claim 17

As amended, Claim 17 reads as follows:

17. The computer-readable storage medium of claim 16,
wherein:
each query component specifies a subset of enterprise data objects;
and
the query expression added to the first query component specifies a
set of values, the set of values comprising values of a specified attribute of
the subset of enterprise data objects specified by the second query
component.

Applicants submit that Brumme does not teach each and every limitation of dependent Claim 17. More specifically, Brumme does not teach "the query expression added to the first query component specifies a set of values, the set of values comprising values of a specified attribute of the subset of enterprise data objects specified by the second query component" as recited in Claim 17. The Office Action states on page 10 that Brumme purportedly teaches at Col. 32, lines 41-48 the aforementioned limitation of Claim 17. Applicants submit that Col. 32, lines 43-45 clearly states that the OODB adapter 530 generates a query, different than the query compatible with the data source 500, for the data source 510. Applicants assert that creating a query different from another query is not the same as the query expression added to the first query component specifies a set of values, the set of values comprising values of a specified attribute of the subset of enterprise data objects specified by the second query component. Since Brumme does not teach, suggest, or describe the aforementioned limitation of Claim 17, applicants respectfully submit that Claim 17 is allowable for reasons in addition to the reasons why Claims 13 and 16 are allowable.

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Claim 18

As amended, Claim 18 reads as follows:

18. The computer-readable storage medium of claim 13, wherein:

one of a set of valid query operators is provided as the query operator parameter of the add expression behavior of each query component of the object-oriented heterogeneous data store interface; and

the set of valid query operators comprises:

an attribute contains (Contains) query operator that tests if a data object attribute specified by a first query term contains a value specified by a second query term;

a value within (Within) query operator that tests if a value specified by the first query term is within a set of values specified by at least one subsequent query term;

a Has query operator that tests if a data object specified by the first query term has at least one of a set of data objects specified by said at least one subsequent query term; and

a null test (IsNull) query operator that tests if the data object attribute specified by the first query term has a null value.

Applicants submit that Brumme does not teach each and every limitation of dependent Claim 18. More specifically, Brumme does not teach "the set of valid query operators comprises an attribute contains (Contains) query operator that tests if a data object attribute specified by a first query term contains a value specified by a second query term," "a value within (Within) query operator that tests if a value specified by the first query term is within a set of values specified by at least one subsequent query term," "a Has query operator that tests if a data object specified by the first query term has at least one of a set of data objects specified by said at least one subsequent query term," and "a null test (IsNull) query operator that tests if the data object attribute specified by the first query term has a null value," as recited in Claim 18. The Office Action states on page 10 that Brumme purportedly teaches at Col. 9, lines 34-45 the relationship between foreign objects and the uniform model is determined and processed to read on "the set of valid query operators comprises an attribute contains (Contains) query operator that tests if a

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data object attribute specified by a first query term contains a value specified by a second query term." Applicants submit that the aforementioned section of Brumme does not contain any query operators let alone a valid query operator. Even if the determination and the processing of the relationship between foreign objects and the uniform model is performed by an attribute contains query operator, which applicants categorically deny, the data object attribute specified by a first query term does not contain anything let alone contain a value specified by a second query term. The Office Action states on page 11 that Brumme purportedly teaches at Col. 19, lines 45-54 that the object is checked within the database to read on "a value within (Within) query operator that tests if a value specified by the first query term is within a set of values specified by at least one subsequent query term." Applicants respectfully disagree because checking if an object is within the database is not the same as *testing* if a value specified by the first query term *is within a set of values* specified by at least one subsequent query term. The Office Action states on page 11 that Brumme purportedly teaches at Col. 10, lines 45-54 the limitation "a Has query operator that tests if a data object specified by the first query term has at least one of a set of data objects specified by said at least one subsequent query term." The aforementioned section of Brumme reads:

The adapters 110 also support persistence of object instances. As shown in block 340 of FIG. 4, the adapters generate a token to identify that an instance of an object is persistent in the data store managed by the adapter. Although the adapters support persistence through generation of tokens, the persistence mechanism is implemented in the object model 100. One embodiment for implementing a persistence mechanism in the integrated object oriented system of the present invention is described more fully below.

Applicants cannot find in the aforementioned section of Brumme a query operator let alone a Has query operator that tests if a data object specified by the first query term has at least one of a set of data objects specified by said at least one subsequent query term. The Office

Action states on page 11 that Brumme purportedly teaches at Col. 26, lines 2-10 that get/set attributes can be used to read on "a null test (IsNull) query operator that tests if the data object attribute specified by the first query term has a null value." Applicants respectfully disagree because "using" attributes is not the same as "testing," by an query operator, if a data object attribute specified by a query term has a null value. Since Brumme does not teach, suggest, or describe the aforementioned limitations of Claim 18, applicants respectfully submit that Claim 18 is allowable for reasons in addition to the reasons why Claim 13 is allowable.

Claim 20

As amended, Claim 20 reads as follows:

20. The computer-readable storage medium of claim 19, wherein each data store object component comprises a field list attribute comprising a field specification for at least one data object attribute of the data object corresponding to the data store object component, the field specification comprising a defer property specifying that retrieval of the data object attribute is deferrable.

Applicants submit that Brumme does not teach the limitations of dependent Claim 20. The Office Action states on page 12 that Brumme purportedly teaches at Col. 26, lines 45-64 an adaptor can indicate persistence, meaning retrieval is not necessary to read on "the field specification comprising a defer property specifying that retrieval of the data object attribute is deferrable." Applicants assert that "persistence" does not mean "not necessary." Persistence means "permanence," and permanence also does not mean "not necessary." Claim 20 does not teach "persistence" or "not necessary" of retrieval of the data object attribute. Claim 20 teaches that the field specification comprises a defer property specifying that retrieval of the data object attribute is deferrable. In other words, the field specification comprises a defer property specifying that the retrieval of the data object can be postponed. Since Brumme does not teach,

suggest, or describe the aforementioned limitation of Claim 20, applicants respectfully submit that Claim 20 is allowable for reasons in addition to the reasons why Claim 13 is allowable.

Claims 23-31

Claim 23, as amended, reads as follows:

23. A computerized system, comprising:
at least one data store, each data store comprising a different data store type, each data store capable of storing at least one data store object;
an object-oriented heterogeneous data store interface comprising at least one data store object component corresponding to at least one of said at least one data store object stored in said at least one data store;
a data store object design graphical user interface configured to enable building of a graphical representation of each data store object corresponding to at least one data store object component of the object-oriented heterogeneous data store interface; and
a data store object source code generator capable of generating object-oriented programming language source code for each data store object component of the object-oriented heterogeneous data store interface.

Applicants submit that Brumme does not teach each and every limitation of independent Claim 23. More specifically, Brumme does not teach "a data store object design graphical user interface configured to enable building of a graphical representation of each data store object corresponding to at least one data store object component of the object-oriented heterogeneous data store interface" and "a data store object source code generator capable of generating object-oriented programming language source code for each data store object component of the object-oriented heterogeneous data store interface" as recited in Claim 23. The Office Action states on page 13 that Brumme purportedly teaches at Col. 34, lines 54-60 the output display presents the graphical information to read on "a data store object design graphical user interface configured to enable building of a graphical representation of each data store object corresponding to at least one data store object component of the object-oriented heterogeneous data store interface." Applicants assert that "presenting" is not the same as "enabling." The aforementioned section of

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Brumme discloses mass storage device 1020, peripheral device(s) 1030, portable storage medium drive(s) 1040, input control device(s) 1070, a graphics subsystem 1050, and an output display 1060 comprised in the computer system 1000. The Office Action is incorrectly implying that because the computer system comprises an output display, the output display can enable building of a graphical representation of each data store object corresponding to at least one data store object component of the object-oriented heterogeneous data store interface. There is simply no teaching in Brumme that a data store object design graphical user interface can be configured to enable building of a graphical representation of each data store object corresponding to at least one data store object component of the object-oriented heterogeneous data store interface. The Office Action states on page 13 that Brumme purportedly teaches at Col. 9, lines 46-59 an adaptor converts or "dress" objects from various data stores into a uniform object model. Applicants assert that "convert" does not mean "generate." Convert means "transform." Claim 23 does not teach conversion let alone an adaptor that converts or "dress" objects from various data stores into a uniform object model. Claim 23 teaches, amongst other limitations, a data store object source code generator capable of generating object-oriented programming language source code for each data store object component of the object-oriented heterogeneous data store interface. In other words, the data store object source code generator is configured to be the cause of object-oriented programming language source code for each data store object component of the object-oriented heterogeneous data store interface. Since Brumme does not teach, suggest, or describe the foregoing limitations of Claim 23, applicants submit that Claim 23 is not rejectable under 35 U.S.C. § 102(b) based on Brumme and request that this ground of rejection be withdrawn and Claim 23 be allowed.

Claims 24-31 depend directly or indirectly from independent Claim 23 and include all of the recitations of the base claim. Accordingly, Claims 24-31 are submitted to be allowable for at

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least the same reasons that Claim 23 is allowable. Moreover, many of these dependent claims include additional limitations, some of which are discussed below, that are also not taught or even remotely suggested by Brumme.

Claim 24

Claim 24 reads as follows:

24. The computerized system of claim 23, further comprising an extensible markup language (XML) data store object definition generator configured to generate an extensible markup language (XML) data store object definition from the graphical representation in accordance with an extensible markup language (XML) data store object definition schema.

Applicants submit that Brumme does not teach the limitations of dependent Claim 24. The Office Action states on pages 13-14 that Brumme purportedly teaches at Col. 8, lines 29-43 a uniform object model that describes data and exhibits XML behavior. The aforementioned section of Brumme reads as follows:

FIG. 2 conceptually illustrates one embodiment of a metamodel for use with the uniform object model of the present invention. As shown in FIG. 2, the metamodel 180 includes metadata 305 and metaobjects 245. The metadata 305 contains the information that describes objects and their types, that are registered with the system type registry. The metaobjects 245 expose the metadata 305 to the system. In the preferred embodiment, the metaobjects 245 expose metadata 305 to the object mediator 160. In one embodiment, the system augments Visual Edge.TM. metadata to define members specified by the uniform type system (i.e. Visual Edge.TM. metadata does not describe the semantically rich uniform type system). Visual Edge.TM. metaobjects are a standard class hierarchy of C++ objects.

Applicants cannot find in the aforementioned section of Brumme an extensible markup language (XML) data store object definition generator let alone an extensible markup language (XML) data store object definition generator configured to generate an extensible markup

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language (XML) data store object definition from the graphical representation in accordance with an extensible markup language (XML) data store object definition schema. Not only can applicants not find "XML" mentioned in the above noted section of Brumme, but "XML" is not mentioned anywhere in Brumme. Since Brumme does not teach XML, Brumme does not teach an extensible markup language (XML) data store object definition generator configured to generate an extensible markup language (XML) data store object definition from the graphical representation in accordance with an extensible markup language (XML) data store object definition schema. Since Brumme does not teach, suggest, or describe the aforementioned limitations of Claim 24, applicants respectfully submit that Claim 24 is allowable for reasons in addition to the reasons why Claim 23 is allowable.

Claim 25

Claim 25 reads as follows:

25. The computerized system of claim 24, wherein the data store object source code generator generates object-oriented programming language source code for each data store object component corresponding to the extensible markup language (XML) data store object definition generated from the graphical representation.

Applicants submit that Brumme does not teach the limitations of dependent Claim 25. As noted above with respect to Claim 24, since Brumme does not teach XML, Brumme does not teach the data store object source code generator generates object-oriented programming language source code for each data store object component corresponding to the extensible markup language (XML) data store object definition generated from the graphical representation as recited in Claim 25. Since Brumme does not teach, suggest, or describe the aforementioned limitation of Claim 25, applicants respectfully submit that Claim 25 is allowable for reasons in addition to the reasons why Claims 23 and 24 are allowable.

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Claim 26

As amended, Claim 26 reads as follows:

26. The computerized system of claim 24, wherein the extensible markup language (XML) data store object definition comprises at least one data store object definition element containing at least one data store object attribute definition element, and each data store object attribute definition element includes a defer property specifying that retrieval of the data store object attribute is deferrable.

Applicants submit that Brumme does not teach the limitations of dependent Claim 26. As noted above with respect to Claim 24, since Brumme does not teach XML, Brumme does not teach an extensible markup language (XML) data store object definition element containing at least one data store object attribute definition element. The Office Action states on page 14 that Brumme purportedly teaches at Col. 26, lines 45-64 an adaptor can indicate persistence, meaning retrieval is not necessary to read on "each data store object attribute definition element includes a defer property specifying that retrieval of the data store object attribute is deferrable." Applicants assert that "persistence" does not mean "not necessary." Persistence means "permanence," and permanence also does not mean "not necessary." Claim 26 does not teach "persistence" or "not necessary" of retrieval of the data object attribute. Claim 26 teaches that each data store object attribute definition element includes a defer property specifying that retrieval of the data store object attribute is deferrable. In other words, each data store object attribute definition element includes a defer property specifying that retrieval of the data store object attribute can be postponed. Since Brumme does not teach, suggest, or describe the aforementioned limitations of Claim 26, applicants respectfully submit that Claim 26 is allowable for reasons in addition to the reasons why Claims 23 and 24 are allowable.

Claim 30

As amended, Claim 30 reads as follows:

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30. The computerized system of claim 29, further comprising, for at least one provider plug-in, a corresponding data store object source code generator plug-in capable of generating data store objects for the type of data store associated with the provider plug-in.

Applicants submit that Brumme does not teach the limitation of dependent Claim 30. The Office Action states on page 16 that Brumme purportedly teaches at Col. 9, lines 46-59 an adaptor converts or "dress" objects from various data stores into a uniform object model. Applicants assert that "convert" does not mean "generate." Convert means "transform." Claim 30 does not teach conversion let alone an adaptor that converts or "dress" objects from various data stores into a uniform object model. Claim 30 teaches for at least one provider plug-in, a corresponding data store object source code generator plug-in capable of generating data store objects for the type of data store associated with the provider plug-in. In other words, for at least one provider plug-in there is a corresponding data store object source code generator plug-in that is the cause of data objects for the type of data store associated with the provider plug-in. Since Brumme does not teach, suggest, or describe the aforementioned limitation of Claim 30, applicants respectfully submit that Claim 30 is allowable for reasons in addition to the reasons why Claim 23 is allowable.

Claim 31

As amended, Claim 31 reads as follows:

31. The computerized system of claim 23, wherein the graphical representation of each data store object comprises a security policy designation.

Applicants submit that Brumme does not teach the limitation of dependent Claim 31. The Office Action states on page 16 that Brumme purportedly teaches at Col. 35, lines 27-34 graphical information. The aforementioned section of Brumme reads as follows:

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In order to display textual and graphical information, the computer system 1000 contains the graphics subsystem 1050 and the output display 1060. The output display 1060 may include a cathode ray tube (CRT) display or liquid crystal display (LCD). The graphics subsystem 1050 receives textual and graphical information, and it processes the information for output to the output display 1060.

The Office Action is incorrectly implying that because the computer system contains a graphics subsystem, the graphical representation of each data store object can comprise a security policy designation. There is simply no teaching in Brumme that the graphical representation of each data store object comprises a security policy designation. Since Brumme does not teach, suggest, or describe the aforementioned limitation of Claim 31, applicants respectfully submit that Claim 31 is allowable for reasons in addition to the reasons why Claim 23 is allowable.

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CONCLUSION

In view of the foregoing remarks, applicants respectfully submit that the above-identified application is in condition for allowance. Re-consideration and re-examination of the application, and allowance of the claims (Claims 1-31) at an early date are solicited. If the Examiner has any questions or comments concerning this matter, the Examiner is invited to contact applicants' undersigned agent at the number provided below.

Respectfully submitted,

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